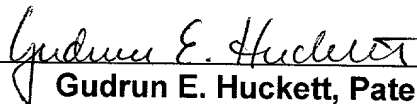




IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Gudrun E. Hockett, Patent Agent

Applicant: Erhard Jung
Serial No: 09/858,150
U.S. Filed: 5/14/2001
Title: Bonding Machine for Lamellar Pieces of Wood to be Joined to a Board and Method for Pressing Lamellar Pieces of Wood to Boards

**Assistant Commissioner for Patents
Washington, D.C. 20231**

PRELIMINARY AMENDMENT

Prior to the first office action, please amend the instant application as follows:

IN THE SPECIFICATION:

Please substitute the attached clean copies of the amended pages 11, 13, and 14 of the literal translation filed concurrently herewith for the pages 11, 13, and 14 of this literal translation. A marked-up version of the pages 11, 13, 14 of the literal translation with all the changes shown is also attached.

IN THE CLAIMS:

Claims 1-60 are cancelled.

Please add the attached new claims 61-114 to the specification.

IN THE ABSTRACT:

Please add the attached Abstract of the Disclosure to the specification.

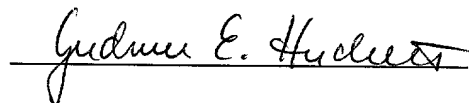
REMARKS

Claims 1-60 have been cancelled and replaced with claims 61-114 drafted in proper U.S. format. Proper headings according to the guidelines for drafting a nonprovisional patent application under 35 U.S.C. 111(a) have been added. A proper Abstract of the Disclosure has been added to the specification.

In view of the foregoing, it is submitted that this application is now in condition for allowance and such allowance is respectfully solicited.

Authorization is herewith given to charge any fees or any shortages in any fees required during prosecution of this application and not paid by other means to Patent and Trademark Office deposit account 50-1199.

Respectfully submitted on September 14, 2001



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GEH

Encl.: new claims 61-114; clean copies of amended pages 11, 13, 14 and marked-up versions of pages 11, 13, 14

NEW CLAIMS 61-114

61. Bonding machine for lamellar pieces of wood (2) to be joined to a board (12), wherein the bonding machine comprises at least one clamping and pressing device (3) and at least one drive, wherein the clamping and pressing device (3) has at least two pressing members (27) which are configured to be loaded independently of one another against the board (12) by a pressure force.

62. Bonding machine according to claim 61, wherein the pressing members (27) extend parallel to the pieces of wood (2) and transversely to a feeding direction (8) of the board (12).

63. Bonding machine according to claim 61, wherein the at least one drive comprises piston-cylinder units (16b) configured to adjust the pressing members (27).

64. Bonding machine according to claim 61, wherein the clamping and pressing device (3) has heating elements (9a) and the pressing members (27) are movable in a direction transversely to the board (12) relative to the heating elements (9a) to a limited extent.

65. Bonding machine according to claim 64, wherein the heating elements (9a) are tubes configured to have a heating medium circulate therethrough.

66. Bonding machine according to claim 65, wherein the heating medium is water, thermal oil, or steam.

67. Bonding machine according to claim 65, wherein the clamping and pressing device (3) has one or more supply lines (18) and one or more return lines (19) for the heating medium connected to the heating elements (9a).

68. Bonding machine according to claim 67, wherein the supply lines (18) of the heating elements (9a) comprise a common supply conduit (20) and the return lines (19) of the heating elements (9a) comprise a common return conduit (21).

69. Bonding machine according to claim 65, wherein the heating elements (9a) are partially enclosed by an insulation (29).

70. Bonding machine according to claim 64, wherein the heating elements (9a) are electrodes.

71. Bonding machine according to claim 64, wherein the heating elements (9a) extend parallel to one another.

72. Bonding machine according to claim 64, wherein the heating elements (9a) extend in the feeding direction (8) of the board (12).

73. Bonding machine according to claim 64, further comprising a common support (26, 37), wherein the heating elements (9a) are fastened to the common support (26, 37).

74. Bonding machine according to claim 73, wherein the support is comprised of two connecting plates (26, 37) which extend transversely to the feeding direction (8) of the board (12) and ends of the heating elements (9a) are fastened to the two connecting plates (26, 37).

75. Bonding machine according to claim 73, wherein the at least one drive comprises piston-cylinder units (16b) configured to adjust the pressing members (27), further comprising coupling members (36, 40) connected to the piston-cylinder units (16a, 16b), wherein the support (26, 37) has through openings configured to receive the coupling

members (36, 40).

76. Bonding machine according to claim 75, wherein the coupling members (36), positioned at an outlet side of the pressing device (3), connect the piston-cylinder units (16b) and the pressing members (27).

77. Bonding machine according to claim 76, wherein one of the coupling members (36) is movable to a limited extent relative to the support (37) in which the one coupling member (36) is received and to the heating elements (9a) in a direction transversely to the plane of the board (12).

78. Bonding machine according to claim 76, wherein the pressing members (27) extend across the area of at least two adjacently positioned heating elements (9a).

79. Bonding machine according to claim 76, wherein the pressing members (27) are positioned at the outlet side of the pressing device (3) in front of the heating elements (9a).

80. Bonding machine according to claim 64, further comprising a support (26), wherein the heating elements (9a) are fastened to the support (26) and are configured for receive tensile forces in the feeding direction (8).

81. Bonding machine according to claim 80, comprising noses (28) connected to the support (26) and positioned in front of each heating element (9a) at the inlet side of the clamping and pressing device (3).

82. Bonding machine according to claim 61, wherein the clamping and pressing device (3) has at least one pressing slide (13) configured to apply the pressing force onto the pieces of wood (2) of the board (12).

83. Bonding machine according to claim 82, comprising a lifting device (14) configured to adjust the pressing slide (13) from a lowered position into a working position.

84. Bonding machine according to claim 83, wherein the pressing slide (13) in the lowered position forms a support for the pieces of wood (2) during insertion into the clamping and pressing device (3).

85. Bonding machine according to claim 82, further comprising a support (26), wherein the heating elements (9a) are fastened to the support (26) and further comprising noses (28) connected to the support (26) and positioned in front of each heating element (9a) at the inlet side of the clamping and pressing device (3). wherein the pressing slide (13) has cutouts into which the noses (28) penetrate.

86. Bonding machine according to claim 82, wherein the lifting device (14) has at least one height-adjustable carriage (14) on which the pressing slide (13) is arranged.

87. Bonding machine according to claim 86, wherein the pressing slide (13) is configured to move transversely to a movement direction of the carriage (14) and absolutely parallel and configured to apply the pressure force onto the pieces of wood (2).

88. Bonding machine according to claim 86, wherein the pressing slide (13) extends across the length of the pieces of wood (2) of the board (12).

89. Bonding machine according to claim 86, comprising a feeding device (1) arranged upstream of the clamping and pressing device (3), wherein the pieces of wood (2) are combined to the board (12) in the feeding device (1).

90. Bonding machine according to claim 89, wherein the feeding device (1) has at least one holding-down device (6, 7) for the pieces of wood (2) of the board (12).

91. Bonding machine according to claim 90, wherein the holding-down device (6, 7) is adjustable in the direction of height.

92. Bonding machine according to claim 91, wherein the holding-down device (6, 7) has at least two holding-down elements arranged successively in the feeding direction (8) of the pieces of wood (2).

93. Bonding machine according to claim 92, wherein the holding-down elements (6, 7) are height-adjustable independent from one another.

94. Bonding machine according to claim 92, wherein the forwardly positioned holding-down element (7) in the feeding direction (8) of the pieces of wood (2) is height-adjustable together with the carriage (14).

95. Bonding machine according to claim 92, wherein the forwardly positioned holding-down element (7) in the feeding direction (8) of the pieces of wood (2) is height-adjustable relative to the pressing slide (13) and to the carriage (14).

96. Bonding machine according to claim 89, wherein the feeding device (1) has at least one slide (11) configured to act on the board (12).

97. Bonding machine according to claim 96, wherein a pressure bed is positioned on the bonded board (12) which, upon insertion of a new board, forms a friction element against the force of the slide (11).

98. Bonding machine according to claim 89, further comprising a coating station for an adhesive arranged upstream of the feeding device (1) and configured to coat at least one of the longitudinal sides of the pieces of wood (2) with an adhesive.

99. Bonding machine according to claim 98, wherein the at least one longitudinal

side of the pieces of wood (2) are coated during transport into the feeding device (1).

100. Bonding machine according to claim 61, wherein the pressing device (3) has a support (10) for the board (12).

101. Bonding machine according to claim 100, wherein the support (10) is comprised of at least two support parts (10a).

102. Bonding machine according to claim 101, wherein the support parts (10a) are heating members.

103. Bonding machine according to claim 102, wherein the support parts (10a) are formed as tubes through which the heating medium is circulated.

104. Bonding machine according to claim 103, comprising one or more supply lines (22) and one or more return lines (23) for the heating medium connected to the support parts (10a).

105. Bonding machine according to claim 104, wherein the supply lines (22) comprise a common supply conduit (24) and the return lines (23) comprise a common return conduit (25).

106. Bonding machine according to claim 101, wherein the support parts (10a) are partially enclosed by an insulation (29).

107. Bonding machine according to claim 101, wherein the support parts (10a) are electrodes which extend transversely to the pieces of wood (2) of the board (12).

108. Bonding machine according to claim 61, wherein the clamping and pressing device (3) has lower heating elements (10a) fastened on a frame of the clamping and pressing device (3) and configured to receive tensile forces in the feeding direction (8).

109. Method for pressing lamellar pieces of wood to boards, the method comprising the steps of:

coating at least one longitudinal side of the pieces of wood with an adhesive;

positioning the pieces of wood so as to rest against one another with the longitudinal sides that are coated with the adhesive; and

pressing the pieces of wood in a clamping and pressing device (3) by exerting a pressing power against a brake force exerted transversely to the pressing power onto the board (12).

110. Method according to claim 109, further comprising the step of pushing a new board (12) into the clamping and pressing device (3) against a brake force acting onto the board (12) to be pushed out.

111. Method according to claim 109, wherein the individual lamellar pieces of wood (2) upon insertion into the clamping and pressing device (3) are pressed underneath and past noses (28) of the clamping and pressing device (3) and are aligned thereby vertically before the pressing power is applied horizontally.

112. Method according to claim 109, further comprising the step of securing the board (12), before pressing, in the clamping and pressing device (3) by applying a holding-down pressure.

113. Method according to claim 109, wherein the board (12) after pressing is pushed out of the clamping and pressing device (3) by a new board (12) to be pressed.

114. Method according to claim 113, wherein the new board (12) is pressed against the rear edge of the leading board (12) and wherein the clamping and pressing device (3) has pressing members (27) exerting the brake force.

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**BONDING MACHINE FOR LAMELLAR PIECES OF WOOD TO BE JOINED
TO A BOARD AND METHOD FOR PRESSING LAMELLAR
PIECES OF WOOD TO BOARDS**

Background of the Invention

1. Field of the Invention

The invention relates to a bonding machine for lamellar pieces of wood to be joined to a board as well as a method for pressing lamellar pieces of wood to boards.

2. Description of the Prior Art

Such bonding machines serve to manufacture boards from individual elongate pieces of wood. For this purpose, the pieces of wood are coated on a longitudinal side with an adhesive and are placed against one another with these longitudinal sides. In this way, boards of different length can be produced from the pieces of wood. The pieces of wood resting against one another and bonded at the longitudinal sides are pressed in the pressing device.

Summary of the Invention

It is an object of the invention to configure the bonding machine of the aforementioned kind and the method of the aforementioned kind such that an optimal pressing of the pieces of wood in the pressing device is ensured.

This object is solved according to the invention for the bonding machine of the aforementioned kind in that the clamping device has at least two pressing members which can be loaded independently of one another against the board by a pressure force and for the method of the aforementioned kind according to the invention in that the pressing power is exerted against a brake pressure exerted transversely thereto onto the board.

In the bonding machine according to the invention the pressing members can be loaded independent of one another by a pressing force. Accordingly, the pressing force can be optimally applied onto the pieces of wood, in particular, when they have thickness tolerances. By means of the bonding machine, it is possible to carry

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Further features of the invention result from the further claims, the description, and the drawings.

Brief Description of the Drawings

The invention will be explained in more detail with the aid of several embodiments illustrated in the drawings. It is shown in:

- Fig. 1 in a side view and a schematic illustration a bonding machine for pieces of wood according to the invention;
- Fig. 2 in a schematic illustration the functions of the holding-down device of the bonding machine according to the invention;
- Fig. 3 in a schematic illustration different functions of two slides of the bonding machine according to the invention;
- Fig. 4 the bonding machine according to the invention during the pressing action;
- Fig. 5 in a side view a part of the heating device of the bonding machine according to the invention;
- Fig. 6 a front view of the heating device according to Fig. 5;
- Fig. 7 and
Fig. 8 in illustrations corresponding to Figs. 5 and 6 a further embodiment of the heating device for the bonding machine according to the invention;

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- Fig. 9 in an enlarged illustration an insulation of heating tubes of the heating device of the bonding machine according to the invention;
- Fig. 10 in an enlarged illustration and in a front view pressing members of the bonding machine according to the invention;
- Fig. 11 in an enlarged illustration and in a side view a part of the pressing device of the bonding machine according to the invention.

Description of Preferred Embodiments

By means of the bonding machine elongate work pieces of wood are bonded and pressed with one another with their longitudinal sides resting against one another. The bonding machine has a feeding device 1 with which the pieces of wood 2 (Fig. 2), resting with their longitudinal sides against one another, are fed to a pressing device 3. In it, the pieces of wood 2, resting with their longitudinal sides against one another and bonded at their longitudinal sides with one another, are pressed. The boards 12 produced of the pieces of wood then reach a support table 4 downstream of the pressing device 3.

The pieces of wood 2 are transported first in their longitudinal direction (arrow T in Fig. 1) into the feeding device 1. For this purpose, a transport device (not illustrated) is provided which is preferably embodied as an endless circulating conveyor belt on which the pieces of wood 2 are transported individually and successively into the feeding device 1. During transport in the longitudinal direction an adhesive is applied with a coating device for adhesives (not illustrated) at least onto one longitudinal side, in a manner known in the art. In this way, the pieces of wood 2 are introduced successively into the feeding device 1 in which, as illustrated, for example, in Fig. 2, they rest with their longitudinal sides coated with the adhesive against one another.

MARKED-UP VERSION OF PAGE 11 OF THE TRANSLATION

BONDING MACHINE FOR LAMELLAR PIECES OF WOOD TO BE JOINED TO A BOARD AND METHOD FOR PRESSING LAMELLAR PIECES OF WOOD TO BOARDS

Background of the Invention

1. Field of the Invention

The invention relates to a bonding machine for lamellar pieces of wood to be joined to a board ~~according to the preamble claim 1~~ as well as a method for pressing lamellar pieces of wood to boards ~~according to the preamble of claim 55~~.

2. Description of the Prior Art

Such bonding machines serve to manufacture boards from individual elongate pieces of wood. For this purpose, the pieces of wood are coated on a longitudinal side with an adhesive and are placed against one another with these longitudinal sides. In this way, boards of different length can be produced from the pieces of wood. The pieces of wood resting against one another and bonded at the longitudinal sides are pressed in the pressing device.

Summary of the Invention

It is an object of the invention to configure the bonding machine of the aforementioned kind and the method of the aforementioned kind such that an optimal pressing of the pieces of wood in the pressing device is ensured.

This object is solved according to the invention for the bonding machine of the aforementioned kind in that the clamping device has at least two pressing members which can be loaded independently of one another against the board by a pressure force with the characterizing features of claim 1 and for the method of the aforementioned kind according to the invention in that the pressing power is exerted against a brake pressure exerted transversely thereto onto the board with the characterizing features of claim 55.

In the bonding machine according to the invention the pressing members can be loaded independent of one another by a pressing force. Accordingly, the pressing force can be optimally applied onto the pieces of wood, in particular, when they have thickness tolerances. By means of the bonding machine, it is possible to carry

MARKED-UP VERSION OF PAGE 13 OF THE TRANSLATION

Further features of the invention result from the further claims, the description, and the drawings.

Brief Description of the Drawings

The invention will be explained in more detail with the aid of several embodiments illustrated in the drawings. It is shown in:

- Fig. 1 in a side view and a schematic illustration a bonding machine for pieces of wood according to the invention;
- Fig. 2 in a schematic illustration the functions of the holding-down device of the bonding machine according to the invention;
- Fig. 3 in a schematic illustration different functions of two slides of the bonding machine according to the invention;
- Fig. 4 the bonding machine according to the invention during the pressing action;
- Fig. 5 in a side view a part of the heating device of the bonding machine according to the invention;
- Fig. 6 a front view of the heating device according to Fig. 5;
- Fig. 7 and
Fig. 8 in illustrations corresponding to Figs. 5 and 6 a further embodiment of the heating device for the bonding machine according to the invention;

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- Fig. 9 in an enlarged illustration an insulation of heating tubes of the heating device of the bonding machine according to the invention;
- Fig. 10 in an enlarged illustration and in a front view pressing members of the bonding machine according to the invention;
- Fig. 11 in an enlarged illustration and in a side view a part of the pressing device of the bonding machine according to the invention.

Description of Preferred Embodiments

By means of the bonding machine elongate work pieces of wood are bonded and pressed with one another with their longitudinal sides resting against one another. The bonding machine has a feeding device 1 with which the pieces of wood 2 (Fig. 2), resting with their longitudinal sides against one another, are fed to a pressing device 3. In it, the pieces of wood 2, resting with their longitudinal sides against one another and bonded at their longitudinal sides with one another, are pressed. The boards 12 produced of the pieces of wood then reach a support table 4 downstream of the pressing device 3.

The pieces of wood 2 are transported first in their longitudinal direction (arrow T in Fig. 1) into the feeding device 1. For this purpose, a transport device (not illustrated) is provided which is preferably embodied as an endless circulating conveyor belt on which the pieces of wood 2 are transported individually and successively into the feeding device 1. During transport in the longitudinal direction an adhesive is applied with a coating device for adhesives (not illustrated) at least onto one longitudinal side, in a manner known in the art. In this way, the pieces of wood 2 are introduced successively into the feeding device 1 in which, as illustrated, for example, in Fig. 2, they rest with their longitudinal sides coated with the adhesive against one another.